

ENGINEERING STANDARD

FOR

402 - DAM, FLOODWATER RETARDING

Definition

A single-purpose dam designed for temporary storage of floodwater and for its controlled release.

Scope

This standard covers dams constructed to retard floodwater.

Purpose

To reduce flood damages downstream by controlling the release rate from flood flows of predetermined frequencies. They may also permit the use of more economical channel modifications or stabilizing structures in the channel downstream and reduce environmental hazards and pollution.

Conditions Where Practice Applies

This practice applies only to sites meeting all of the following conditions:

1. Topographic, geologic, and soils conditions at the proposed site are satisfactory for the development of a feasible dam and reservoir.
2. The sediment yield at the site is not excessive.

Special attention shall be given to maintaining habitat for fish and wildlife if applicable.

Design Criteria

All dams designed under this standard shall meet or exceed the criteria as called for in the standard for Ponds (378) or in TR-60, as appropriate, except as specifically modified by this standard.

The capacity of the principal spillway shall be adequate to discharge, in 10 days or less, the floodwater storage needed to provide the desired level of protection to the downstream benefited area. Storage provided primarily for the purpose of reducing the frequency of use of the emergency spillway need not be included in this 10-day

drawdown limitation. The determination of capacity must be based on consideration of the benefits that accrue to the reduction in the discharge rate, damages that may result from prolonged outflow, and limitations in water rights or other legal requirements. Longer release times may be used if warranted by downstream conditions. The discharge through gated outlets shall not be considered in determining the emptying time of the retarding pool.

The elevation of the crest of the lowest stage of the principal spillway shall be set at the elevation of the sediment pool. For dry dams, the riser shall be designed to permit design discharge at the sediment pool elevation with provisions for discharging water at lower elevations to satisfy the functional requirements of the structure.

All parts of the principal spillway, except attached gates and trash racks, shall have an expected service life equal to or greater than the design life of the structure or provisions made for replacement. Principal spillways shall meet the requirements with respect to materials established in the Standard for Ponds (378) or in TR-60, as appropriate.

The minimum diameter of the conduit used as a principal spillway shall be 10 inches.

The storage volume shall not be less than the expected sediment accumulation during a period equal to the design life.

The retarding storage requirements shall be of such as to contain the runoff expected to occur at a frequency consistent with the level of protection to be provided to the downstream benefited area, with proper allowance for discharge through the principal spillway. The retarding storage capacity shall be sufficient to limit the use of the emergency spillway to a permissible frequency and duration based upon consideration of the erosion resistance of the spillway material and vegetative protection to be provided.

Vegetation

Disturbed areas shall be established to close growing cover as soon as possible after construction. Vegetation shall be maintained.

Plans and Specifications

Plans and specifications for installing floodwater retarding dams shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

References: National Engineering Handbooks
Technical Release No. 60

CONSTRUCTION SPECIFICATION

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Scope

Specifications for construction of floodwater retarding dams are contained in the Standard for Ponds (378) as a minimum. Those within the scope of the criteria contained in Technical Release No. 60 shall be in accordance with the National Engineering Handbook, Section 20, Specifications for Construction Contracts.